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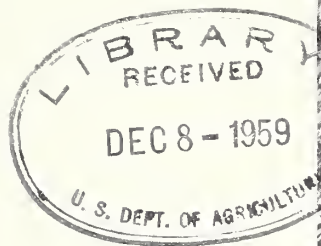
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TIMBER, WATER, AND STAMP CREEK



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LOGGING DAMAGE

*to the forest and streams
has occurred all too often.*

When roads are located beside streams,
like this...



...the logger has high costs of maintenance: tire damage is high, and the loads that can be hauled are below truck capacity. After a rain, this road cannot be travelled because the stream flows down the roadbed.

Erosion like this not only ruins the road, but also muddies the streams, causes flooding, and ruins the fishing.

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Roads must be well drained. When there is improper drainage, the logger has high costs. Here is a road where no water-control measures were taken...

Today, with modern hauling equipment, a good all-weather logging road system can save in total cost by reducing skidding distance, truck and road maintenance cost, and lost time, thus providing more round trips per day at truck capacity.



By keeping the roads and skid trails away from the streams, and by keeping the water out of the roads and skid trails, damage

CAN BE PREVENTED

THE STAMP CREEK TIMBER SALE

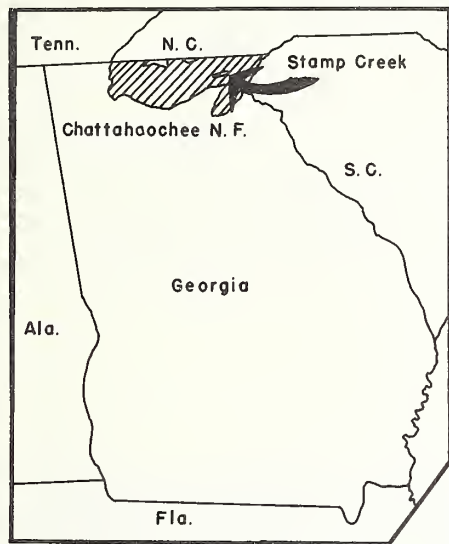
The Stamp Creek sale is an example of modern techniques at work. The sale was made on an 800-acre drainage of the Chattahoochee National Forest, in Georgia. The cut was slightly over one million board-feet. Certain standards concern-

ing roads, skid trails, and logging practices were written into the contract. The logger, under direct contract with the lumber company, was skeptical about the specifications at first, but he agreed to take the contract.

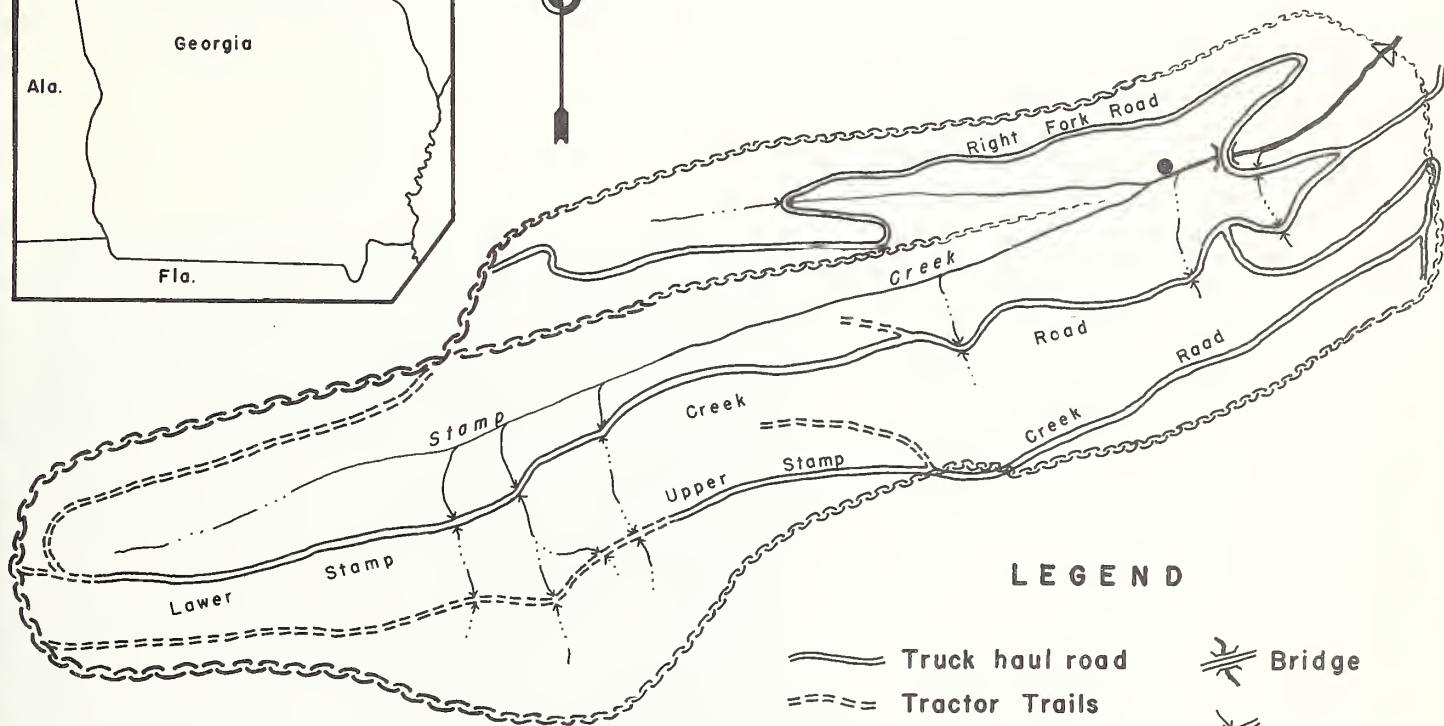
KEEPING ROADS AND SKID TRAILS AWAY FROM STREAMS

The location of the roads and skid trails was worked out on the ground by a U. S. Forest Service crew from the Coweeta Hydrologic Laboratory, and the Tallulah Ranger District of the Chattahoochee National Forest. The entire transportation system was planned in advance of any construction. The first step in solving some of the water and erosion problems was locating the roads away from the streams: this gave any water running off the road a chance to seep back into the ground before entering the stream.

The contract also required that the logger work in the woods every month of the year. This was a test to see whether a good transportation system would permit operations in all kinds of weather. The logger was able to haul logs within 24 hours after each rain without resorting to tire chains. Chains would have cut the road surface and started erosion. Roads must be adequately gravelled when hauling is necessary during or immediately following a rain.

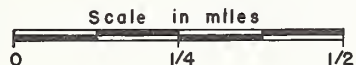


MAP AND LOCATION OF THE **STAMP CREEK DRAINAGE** CHATTAHOOCHEE N. F. GEORGIA



LEGEND

- | | | | |
|--|---------------------------|--|---------|
| | Truck haul road | | Bridge |
| | Tractor Trails | | Culvert |
| | Boundary Ridge | | |
| | Sediment-sampling station | | |



KEEPING THE WATER OUT OF THE ROADS

The logger constructed the roads himself with a bulldozer owned by the lumber company. He was closely supervised by a member of the Tallulah Ranger District staff and quickly caught on to what was required.

The roads had to cross the stream at right angles (as shown on the map). This prevented the water from flowing alongside the road and got the road away from the stream as fast as possible. Drainage structures--dips--were constructed at regular intervals depending upon the grade of the road.

The roadbanks were left vertical. A shallow vertical cut reduces erosion and avoids the need for stabilization treatment. Frost, acting on the vertical face, caused the bank to slump and the root and litter mat fell down over it, protecting the loose material from erosion.

The trucks hauled on carefully constructed climbing roads: a maximum grade of 10 percent was specified.

When roads are located near the contour, inside banks may be kept low, which helps them heal faster, and pitched grades which cause more erosion are avoided.

The roads were gravelled at stream crossings--again to prevent washing of the surface. Culverts or bridges were used at all stream crossings to control water movement and to prevent trucks from bogging down.



FELLING AND SKIDDING

Most of the trees were felled downhill, topped, and branches were removed from the bole. The slash was moved only if it lay in a road or stream. To facilitate tree-length

skidding and avoid erosion, the trees were not bucked into logs until they arrived at the log deck. With the butt end of the trees pointing uphill, it was easy to choke and skid them up to the deck.

Skidding was done with homemade power equipment. It was almost all done uphill so as to avoid situations like this...



...where many logs are dragged behind a horse along the same trail, cutting down into the soil, creating water channels and causing erosion.

Skidding out of small draws was always toward the ridges--away from the streams--so as to cause little damage to the soil and the stream.



The A-frame consisted of two 25-foot booms, a winch, and a 6-cylinder truck engine. The entire unit was mounted on skids so that the bulldozer could haul it between sets. This unit skidded trees a maximum distance of 600 feet uphill to the deck and also loaded the logs on the truck after the trees had been bucked. The bulldozer, equipped with a winch, skidded logs the A-frame couldn't handle.

The A-frame cable was attached to the butt end of the tree and the long booms lifted the butt off the ground while skidding. Only occasionally was more than one tree winched over the same trail, so there was little damage to the soil.

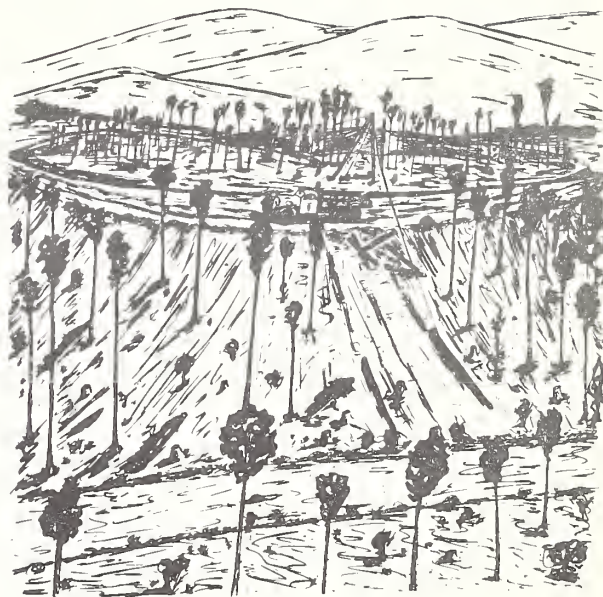


Instead of this...



...where all the water collected in the skid trails and was funnelled into the stream...

we had this...



...where any water collecting at the deck or in trails was dispersed and re-entered the soil before reaching the stream.

AT THE END OF THE SALE

Upon completion of operations in each logging unit, the roads and skid trails were encouraged to heal as rapidly as possible.

Ruts, debris, and water channels were bulldozed out, and drainage dips were checked to make sure they were operating properly. The cost of this operation was about 75 cents per thousand board-feet. In addition, some exposed areas of the roads were seeded with grasses to stabilize the soil. When the low, vertical banks slumped, the roads were healed and erosion was effectively prevented.

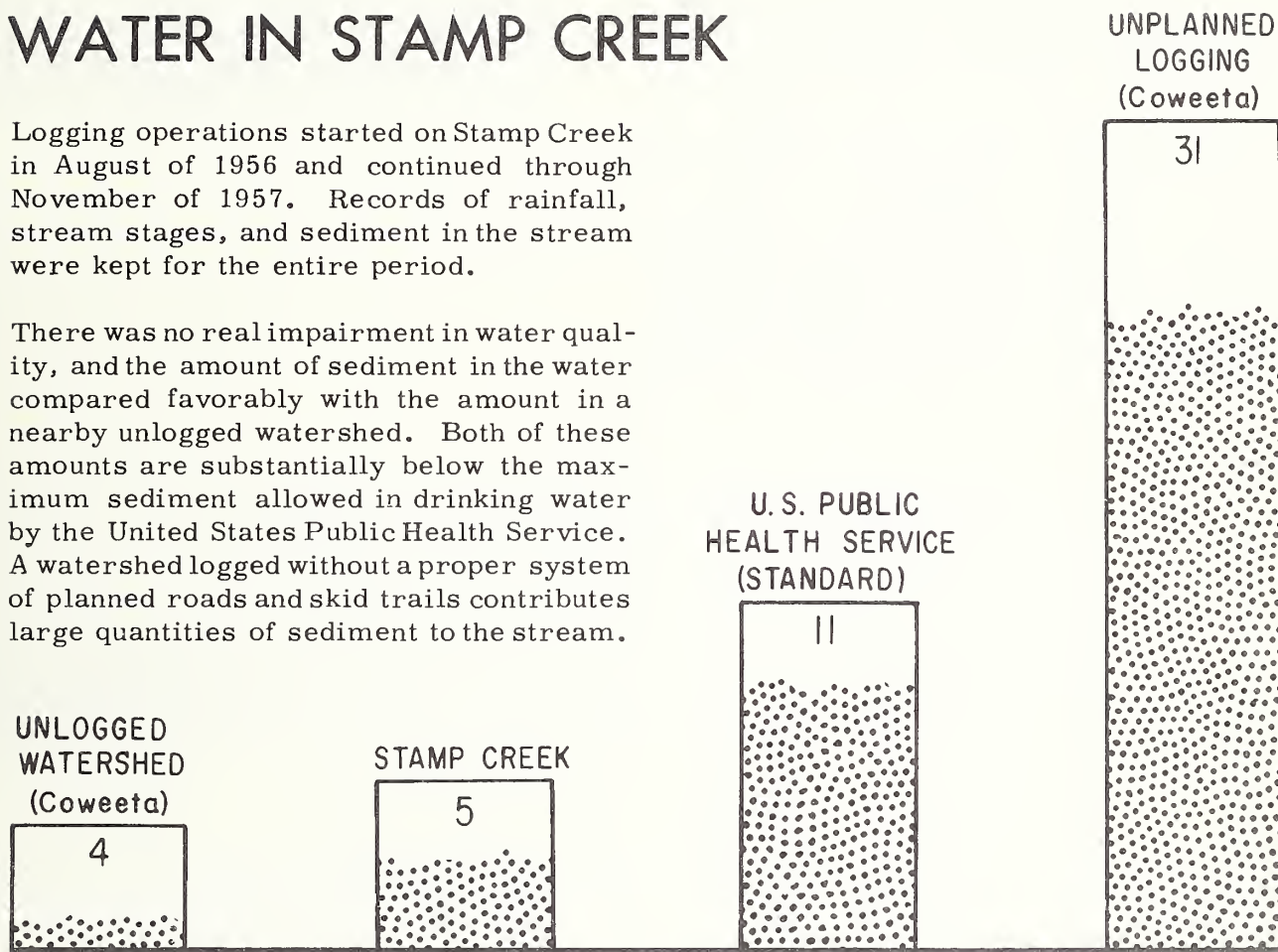


A planned road system and proper logging practices not only proved a sound financial investment to the logger, but also protected the soil, water, and other resources of the land.

WATER IN STAMP CREEK

Logging operations started on Stamp Creek in August of 1956 and continued through November of 1957. Records of rainfall, stream stages, and sediment in the stream were kept for the entire period.

There was no real impairment in water quality, and the amount of sediment in the water compared favorably with the amount in a nearby unlogged watershed. Both of these amounts are substantially below the maximum sediment allowed in drinking water by the United States Public Health Service. A watershed logged without a proper system of planned roads and skid trails contributes large quantities of sediment to the stream.



Average number of parts of sediment per million parts of water in the stream.

THE MEANING OF THE STAMP CREEK STORY

The logger who worked on Stamp Creek operated at a satisfactory profit. He was able to haul bigger loads in shorter time. His tires lasted longer and so did his truck. A good logger is a good woodsman, and this logger left the woods in a good condition.

The public's stake in the National Forest has been safeguarded by this planned and carefully executed transportation system. This planning has greatly facilitated future protection and all resource use on the area.

KEY POINTS TO REMEMBER

Complete layout of all roads and skid trails should be made in advance of construction--preferably in the fall or winter when the leaves don't interfere with seeing the lay of the land.

Keep water out of the roads and skid trails by providing water control--construct drainage dips; keep the grades down; cut banks vertically; gravel the road near culverts, bridges, pitches, and where needed elsewhere; and seed the road to grass when the logging job is through.

Keep the roads out of the streams--locate the roads as far as practicable from the streams, cross streams at right angles, and use culverts or bridges at all stream crossings.

Skid tree-length logs uphill with power equipment--lift butt-end of the tree being skidded, skid to the ridges between small draws, and do not skid across or along a stream.

Maintain good road and trail conditions during and after operations.

THE LOGGER SAYS:



"I don't think it cost very much more to log like that. It was interesting to log uphill and skid away from the water. I learned a lot on that sale. You've got an advantage when you skid and load with one unit.

"The roads were really good: I hauled as much as 3,600 board-feet on a load--the average was around 2,000.

"All the time we were logging, my men and I drank water out of the stream, and I'd go back there today and drink out of it."



